Foundational Postulates for Artificial General Intelligence

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Full Translation

The full English translation of the six foundational postulates will be inserted here. This file is prepared and ready for the translated content to replace this placeholder.

1. Cognitive Curvature: Bias as the Geometry of Knowledge

Summary

This postulate proposes that bias is not a defect or an undesirable artifact, but the inherent *curvature* of any cognitive space. Just as mass curves spacetime in physics, data, experience, and architecture curve the internal representational space of human and artificial cognition. Cognitive curvature determines what can be inferred, what paths of reasoning are favored, and what interpretations become natural or restricted.

Definition

Every cognitive system—human, artificial, or hybrid—contains an internal representational manifold that is never flat. Its geometry is shaped by:

- prior experience
- training data
- architectural constraints
- cultural framing
- optimization objectives

This deformation is **cognitive curvature (κ)**.
Bias is the observable expression of κ.

Key Properties

- Inherent: no cognitive system can exist without curvature.
- Persistent: curvature remains even after attempts to "debias" a model.
- Measurable: curvature can be mapped and characterized.
- Transformable: curvature can be reorganized but never eliminated.

Implications for AGI

An AGI must *understand and adapt* its own curvature rather than attempting to remove it. Curvature is not an error; it is the geometry of thought itself.

2. Structural Invariants of Knowledge

Summary
Structural invariants are stable relationships, patterns, or symmetries that remain constant even when the form, data, or context changes. They represent the structural essence of a phenomenon and enable generalization, transfer, and conceptual stability in both human and artificial cognition.

Definition
A structural invariant is a relationship or pattern that persists under changes in:
- representation
- scale
- context
- noise
- architecture

If a structure survives transformation, it is an invariant.

Key Properties
- Persistence – survives representational changes
- Robustness – remains under noise
- Generality – spans multiple domains
- Transferability – supports learning in new contexts
- Essentiality – expresses the core structure

Role in AGI
Generalization requires detecting and preserving invariants across domains. An AGI must identify what remains stable when everything else changes.

3. Mirror Models: The Internal Mechanism of Self-Coherence

Summary
Mirror Models are internal cognitive sub-systems that observe, compare, and contrast representations produced by other models. They do not replicate content; they replicate *structure*. Their purpose is to detect inconsistencies, distortions, and excessive curvature, preserving self-coherence and enabling internal error correction.

Definition
A Mirror Model is a functional cognitive unit that:
■ compares internal structures
■ detects curvature (κ)
■ highlights shared invariants (I)
■ reveals inconsistencies
■ selects the most stable interpretation

The mirror is not a copy; it is a structural comparator.

Functions
■ Detection of cognitive curvature
■ Exposure of underlying invariants
■ Internal self-correction without external labels
■ Stabilization of meaning and reasoning

Relevance to AGI
Current AI models cannot audit themselves.
Mirror Models offer a path toward self-evaluating, self-correcting systems—core requirements for AGI.

4. The Multimodel Mathematical Space

Summary
Intelligence does not emerge from a single model but from interactions among multiple internal representations coexisting within a shared cognitive space. This space—called the **Multimodel Mathematical Space (E)**—is an abstract topological environment where models coexist, compare structures, transform representations, and converge.

Definition
The Multimodel Mathematical Space (E) is a representational environment where models:
■ coexist
■ compare structures
■ transform without losing identity
■ align or contrast invariants
■ adjust curvature
■ navigate conceptual distances

It is not physical—it is mathematical and relational.

Components
■ Points or regions = models
■ Conceptual distances = similarity or divergence
■ Trajectories = transformations (T)
■ Curvature fields = regions of bias (κ)
■ Invariance axes = stability zones (I)

Importance for AGI
E is the structural "world" in which all other postulates operate.
Without E, cognitive curvature, invariants, and mirror models cannot interact coherently.

5. Structural Generalization Theory (SGTG)

Summary
The Structural Generalization Theory formalizes generalization as the ability to preserve structural relationships across changes in domain, representation, or context. It is expressed by the core equation:

G = f(E, κ, I, T)
where:
■ E = Multimodel Mathematical Space
■ κ = Cognitive Curvature
■ I = Structural Invariants
■ T = Structural Transformations

Definition
Generalization is a structural—not statistical—capacity.
A system generalizes when it can preserve invariants while adapting its curvature and applying valid transformations across domains.

Principles
■ Curvature shapes interpretation
■ Invariants preserve meaning
■ Transformations transfer structure
■ E provides the space where everything interacts

Implications for AGI
A true AGI is one that can *structurally preserve knowledge through change*.
SGTG unifies all prior postulates into a single explanatory framework.

6. The Cognitive River: Internal Information Flow Toward AGI

Summary
The Cognitive River represents the internal, emergent flow of structured information generated within a cognitive system. It does not come from training data; it arises from interactions among models, invariants, curvature, and transformations. The Cognitive River is the dynamic process that guides a system toward deeper layers of coherence and understanding.

Definition
A Cognitive River is an emergent flow characterized by:
■ self-organization
■ directional movement toward stable structures
■ erosion of inconsistent patterns
■ reinforcement of invariants
■ independence from model size or compute power

It is the “life” inside a cognitive architecture.

Contrast with Current AI (the Tunnel vs. the River)
■ The *tunnel* is the brute-force approach: more data, more compute, more parameters.
■ The *river* is structural: it follows natural paths of internal consistency.

Role in AGI
An AGI will emerge not from scaling hardware, but from understanding and navigating these internal flows.

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